

## INTRODUCTION

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Infraclavicular brachial plexus blockade (ICB) provides anesthesia for surgery of the hand, forearm, elbow, and distal humerus. Both the axillary and musculocutaneous nerves are affected/blocked at the level of the cords before they branch from the brachial plexus sheath. In contrast to interscalene and supraclavicular brachial plexus blockade, an infraclavicular block has the advantage of minimal risk to intravertebral, intrathecal, or epidural injection, as well as reduced incidence of phrenic nerve paralysis or stellate ganglion block.<sup>1</sup> However, an ICB has a small risk of pneumothorax, hematoma, and nerve injury. Dexmedetomidine is a lipophilic  $\alpha$ -methylol derivative with a higher affinity for  $\alpha_2$  – receptors than clonidine. Compared with clonidine, dexmedetomidine is more selective to  $\alpha_2$  –receptors ( $\alpha_2 : \alpha_1$  specificity ratio is 200:1 for clonidine and 1600:1 for dexmedetomidine). Dexmedetomidine has a shorter half-life (2–3 h) than clonidine (12–24 h). It has sedative, analgesic, and sympatholytic effects that blunt many of the cardiovascular responses seen during the perioperative period. The sedative and analgesic effects are mediated by  $\alpha_2$  - adrenergic receptors in the brain (locus ceruleus) and spinal cord. When used intraoperatively, dexmedetomidine reduces intravenous and volatile anesthetic requirements; when used postoperatively, it reduces concurrent analgesic and sedative requirements

**AIM OF THE STUDY :** To test the efficacy of adding dexmedetomidine to bupivacaine during placement ultrasound guided infraclavicular brachial plexus block.

**MATERIALS AND METHODS :** The institutional ethical committee approval for the study was obtained. The informed written consent was obtained from the patients participating in the study was obtained. 60 ASA I and II patients of age 18 to 60 years Undergoing elective in Upper limb Surgery were selected. Patients whose medical history, laboratory data, or physical examination showed evidence of abnormal hepatic or renal function or severe cardiovascular, pulmonary, neurological, psychiatric, or metabolic disease were excluded from the study.

**METHODOLOGY :** Patients scheduled for elective upper limb surgery were eligible for the study. 60 Patients were randomly assigned to two groups. **Group B :** Patients Received ultrasound guided infraclavicular brachial plexus block using 30 mL of 0.33% bupivacaine **Group BD :** patients received ultrasound guided infraclavicular brachial plexus block 30 mL of 0.33% bupivacaine mixed with 0.75  $\mu$ g/kg of dexmedetomidine

**PARAMETERS TO BE MONITORED :** The following parameters are assessed: HR,BP,SPO2 SATURATION block success rate, sensory onset time and duration, motor block onset time and duration, analgesic pain scores using the verbal rating scale (VRS) for pain, duration of analgesia, and amount of supplemental intravenous (IV) morphine required

**RESULTS :** There were no significant differences between the groups with respect to age, sex, weight, height, ASA physical status 1 &2 and Successful blockade was achieved in 96.7% of patients in both groups and all patients recovered uneventfully without sensory or motor deficit and no evidence of respiratory depression,

bradycardia, or hypotension reported. The dexmedetomidine group of patients (Group BD) showed a statistically significant shorter time to onset of sensory blockade (14.167 vs 19.8 min,  $P=0.001$ ), longer sensory block duration (178.7 vs 122.46 min,  $P=0.001$ ). The dexmedetomidine group of patients (Group BD) showed a statistically significant shorter onset time to motor blockade (15.53 vs 22.13 min,  $P=0.001$ ), longer motor block duration (155.33 vs 104.46 min,  $P=0.001$ ).

The dexmedetomidine group of patients (Group BD) showed a statistically significant longer duration of postoperative analgesia (400.33 vs 232.6 min,  $P=0.001$ ), and lower rescue morphine requirements 48 h after surgery. we conclude that in infraclavicular brachial plexus block addition of dexmedetomidine (0.75 mic/kg) as adjuvant to 0.33% bupivacaine shortens the sensory and motor block onset time, prolongs both sensory and motor block duration. It also significantly delays the first demand for analgesia supplementation, decreases 48 hrs analgesic consumption and is not associated with any major side-effect. The action of dexmedetomidine is most probably peripheral than centrally mediated

**CONCLUSION :** The major limitation of this study was that we did not measure the levels of dexmedetomidine in the plasma that could have further supported the hypothesis that dexmedetomidine has a peripheral action rather than centrally mediated., cost of ultrasound

**Key words :** Dexmedetomidine, Infraclavicular, Ultrasound, Bupivacaine